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In the Cape flora, pollination by rodents is well known in the Proteaceae and has recently been documented in the Ericaceae. *Erica lanuginosa*, a Klein River Mountains (southern Overberg) endemic, has unusually acorn-shaped flowers that do not look like those of a typical *Erica*: the sepals are downy, coloured reddish brown; the lobes of the corolla, which are also covered with fine, soft hairs, are tightly pressed together at the tips to form a sharp "beak" and are split almost to the receptacle, where the angle between them bears a short triangular tooth. These unusual floral traits suggested the possibility of rodent-pollination in this species. Digital camera traps recorded fourteen images of rodents visiting flowers on seven separate days. PVC gutter traps were then used to capture rodents and their scats were examined for the presence of pollen. Dropping samples were crushed and vortexed to separate heavier faecal matter from the lighter pollen which were stained using fuchsin red. Pollen tetrads typical of Ericaceae were observed in droppings of *Acomys subspinosus* using a compound microscope. Flowers of *E. lanuginosa* covered with pollinator exclosure bags set no seeds while the proportion of open, control flowers that set seed was high indicating that pollinators are important for seed set in *E. lanuginosa*. Additional bagged flowers were either self- or cross-pollinated artificially and show that *E. lanuginosa* is self-compatible.

doi:10.1016/j.sajb.2013.02.138

Biological activity of *Ochna* species

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Ochna species are traditionally used by the Zulu tribe of South Africa for the treatment of dysmenorrhea, fertility problems, diarrhoea, haemorrhoids, stomach pains and gangrenous rectitis. The antibacterial activity and number of antibacterial compounds of the acetone leaf extracts of *Ochna natalitia*, *O. pretoriensis*, *O. pulchra*, *O. gamostigmata*, and *O. serullata*, against *Staphylococcus aureus*, *Escherichia coli*, *Enterococcus faecalis* and *Pseudomonas aeruginosa* were determined using the serial dilution microplate assay and bioautography respectively. The cytotoxic effects of the extracts and selective index values were also determined in monkey kidney cells (Vero), human hepatocellular carcinoma cells (C3A) and bovine dermis cells using the MTT assay. Furthermore, their potential mutagenic effects were determined using the Ames test (*Salmonella typhimurium* TA98 and TA100). Bioautography showed that each extract had at least 1 antibacterial compound and *O. gamostigmata* had at least 4 active compounds. The MIC values of the five extracts ranged from 39 to 1250 μg/ml. The IC_{50} values of the extracts ranged from 26 to 99 μg/ml. All the plant extracts had low selective index values (SI) with SI ≤ 1.3. This is a clear indication of non-selective toxicity i.e. extracts are toxic to bacteria as well as mammalian cell lines. Two antibacterial ochnaflavones were successfully isolated following bioassay-guided fractionation. The MIC values of the two compounds ranged from 31.3 to 125 μg/ml with selectivity index values ranging from 1.29 to 5.18 against monkey kidney cells. None of the plant extracts and compounds was mutagenic in *S. typhimurium* TA98 and TA100 (mutagenic index values ≤ 1.59 for TA98 and ≤ 0.92 for TA100). As a result of non-selective toxicity, the extracts may have limited application as ingestible/intravenous therapeutic agents. It may be useful to evaluate acute toxicity in animal studies because cellular toxicity does not always equate to *in vivo* toxicity.

doi:10.1016/j.sajb.2013.02.139

Genetic and floral variation in two colosely related Jumella spp. (Orchidaceae) in Mascarene Islands

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Conservation strategies may not be effective when there are taxonomic confusions within a group of close related species, creating difficult for field biologists to identify the functional biological entities. This is the case of two sister species of orchids endemic to Réunion and Mauritius (Mascarene Islands) *Jumellea fragrans* (Thouars) Schltr. and *Jumellea rossii* Senghas. They are both known as "Faham" and usually named *Jumellea fragrans*, causing taxonomic mix-up and hindering the protection of the species. This study aimed to clarify the taxonomy of "Faham" using a biometric approach at population scale and a population genetics approach. Ten floral characters were measured for 161 individuals collected from ten natural populations. Population genetics were performed for 584 individuals from 20 natural populations representative of the altitudinal range of "Faham" using 13 nuclear microsatellite markers. Spur length was found to be the most useful floral character to distinguish *J. rossii* and *J. fragrans*. Multivariate analysis on genetic pairwise distances between individuals reveals a clear separation between the two species. In terms of conservation, the first recommendation is to recognize the application of the names *Jumellea fragrans* and *Jumellea rossii*. Moreover, *J. fragrans* should be classified as Vulnerable as per IUCN Red List category, and adoption of a protection status is recommended.

doi:10.1016/j.sajb.2013.02.140

Micropropagation of *Helichrysum populifolium*, which produces medicinally active dicaffeoylquinic acid derivatives

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The consumption of food and drinks high in phenolic compounds, is associated with good health and lowers the risk of serious health disorders. *Helichrysum populifolium* is a South African shrub high in phenolic compounds such as dicaffeoylquinic acids, or derivatives thereof. Extracts of *H. populifolium* have previously been shown to exhibit antiviral activity. Large scale isolation of the medicinally active dicaffeoylquinic acid from the plant is challenging since the plant is difficult to cultivate. The aim of this experiment was to establish and optimize an *in vitro* micropropagation technique for *H. populifolium* using leaf discs as the starting material. Leaf discs were sterilised in 1% ethanol followed by a 2% sodium hypochlorite solution with 1 drop of Tween-20® and finally washed thoroughly in